PEB-2131VG2A

Mini-ITX Board

User's Manual

Version 1.0

Table of Contents

How to Use This Manual

How to Use This Manual

The manual describes how to configure your system board to meet various operating requirements.   It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Host Board.

Chapter 1 : System Overview. Presents what you have in the box and give you an overview of the product specifications and basic system architecture for this series model of single host board.

Chapter 2 : Hardware Configuration. Shows the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory and Compact Flash to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give users some guidelines of trouble-shooting.

Chapter 5 : Troubleshooting. Provides various useful tips to quickly get its running with success. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

The content of this manual is subject to change without prior notice.   These changes will be incorporated in new editions of the document.   **Portwell** may make supplement or change in the products described in this document at any time.

Updates to this manual, technical clarification, and answers to frequently asked questions   will   be   shown   on   the   following   web   site   :   http://www.portwell.com.tw/.

Chapter 1
System Overview

1.1 Introduction

Portwell Inc., a world-leading innovator in the Industrial PC (IPC) market and a member of the Intel® Embedded and Communications Alliance (Intel ECA), announced today the Portwell PEB-2131VG2A utilizing the Intel® ECX form factor based on the Intel® Atom™ processor N270 and the Intel® 945GSE chipset with the ICH7-M, can provide the low power consumption for low profile fanless applications such as POS, ATM, Kiosk, Medical, Panel PC and Digital Signage.

PEB-2131VG2A supports dual display by VGA and 24-bit LVDS. With its display-enriched interface, PEB-2131VG2A can support various multimedia devices and enriched IO interfaces that can supply various USB and COM devices.

PEB-2131VG2A supports SO-DIMM memory slot for DDR2 SDRAM up to 2GB , and comes with PS/2 Keyboard and Mouse header, 4 x RS232 with power, 2 x SATA, 2 x Gigabit Ethernet, 7 x USB2.0 ports. It also support CompactFlash Socket and one Mini-PCIEx1 Socket for embedded application usage.

1.2 Check List

The PEB-2131VG2A package should cover the following basic items

- ✓ One PEB-2131VG2A embedded system board
- ✓ One Serial ATA cable
- ✓ One power cable
- ✓ One Installation Resources CD-Title

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1.3 Product Specification

- **Main processor**
  - Support Intel Atom processor N270
  - CPU bus clock: 400/533 MHz

- **Chipset**
  Intel® 945GSE and ICH7-M

- **Main Memory**
  - Support signal channel DDR2 memory interface
  - Up to 2GB DDR2 533 SDRAM on SO-DIMM socket

- **System BIOS**
  AWARD BIOS

- **Expansion Interface**
  One Mini-PCI Express x1 socket

- **SATA Interface**
  Two SATA ports

- **Serial Ports**
  Support four RS-232 serial ports with power

- **USB Interface**
  Support seven USB (Universal Serial Bus) ports (two at rear, five on-board for internal devices)

- **PS/2 Mouse and Keyboard Interface**
  Support on board pin header for PS/2 keyboard/mouse

- **Audio Interface**
  Connector of Mic-in/Line-out

- **Real Time Clock/Calendar (RTC)**
  Support Y2K Real Time Clock/Calendar

- **Watchdog Timer**
  - Support WDT function through software programming for enable/disable and interval setting
  - Generate system reset

- **On-board VGA**
  - Intel 945GSE Integrated GMA950 Graphics device
  - Intel DVMT 3.0 supports up to 128MB video memory

- **On-board Ethernet LAN**
  Dual Gigabit Ethernet (10/100/ 1000 Mbits/sec) LAN ports

- **High Driving GPIO**
  Onboard programmable 8-bit Digital I/O interface

- **Cooling Fans**
  Support one 3-pin power connector for system fan

- **System Monitoring Feature**
  Monitor system temperature and major power sources, etc

- **Outline Dimension (L X W):**
  146mm X 102mm

Configuration:

System Configuration	
CPU Type	Intel® Atom™ 1.60GHz(133*12) FSB:533 L2:512K
SBC BIOS	Portwell,Inc PEB-2131VG2A BIOS Rev.:R1.00.W0(09092009)
Memory	Transcend DDR2-533 2GB(Micron 7WE17D9HNL)
VGA Card	Onboard Mobile Intel®945GSE Express Chipset
VGA Driver	Mobile Intel®945 Express Chipset Family Ver:6.14.10.4926
LAN Card#1	Onboard Realtek RTL 8111C Gigabit Ethernet Chipset
LAN Card#2	Onboard Realtek RTL 8111C Gigabit Ethernet Chipset
LAN Driver#1	Realtek RTL8168C(P)/8111C(P)PCI-E Gigabit Ethernet NIC
LAN Driver#2	Realtek RTL8168C(P)/8111C(P)PCI-E Gigabit Ethernet NIC
Audio Card	Onboard Realtek ALC662 Audio Chipset
Audio Driver	Realtek High Definition Audio Ver:5.10.0.5735
Chip Driver	Intel® Chipset Device Software Ver:8.3.0.1013
USB 2.0 Driver	Intel®82801G(ICH7 Family)USB2 Enhanced Host Controller
SATA HDD	WD WD2502ABYS(250G)
Compact Flash	Apacer AP-CF001DG4CB 1GB
CDROM	Pioneer DVD-227A
Power Supply	Seasonic SSA-0651-1(DC 12V)

Programs for loading both CPU & VGA: Run Burning Test V5.3
RUN time: 10 / 30 Minutes.

Item	Power ON	Full Loading 10Min	Full Loading 30Min
DC 12V	0.11A	0.35A	0.38A
USB Loading Test	4.92V/ 470mA		

- **Operating Temperature:**
  0°C ~ 55°C

- **Storage Temperature:**
  -20°C ~ 80°C

- **Relative Humidity:**
  5% ~ 95%, non-condensing

1.3.1 Mechanical Drawing

[TOP side]
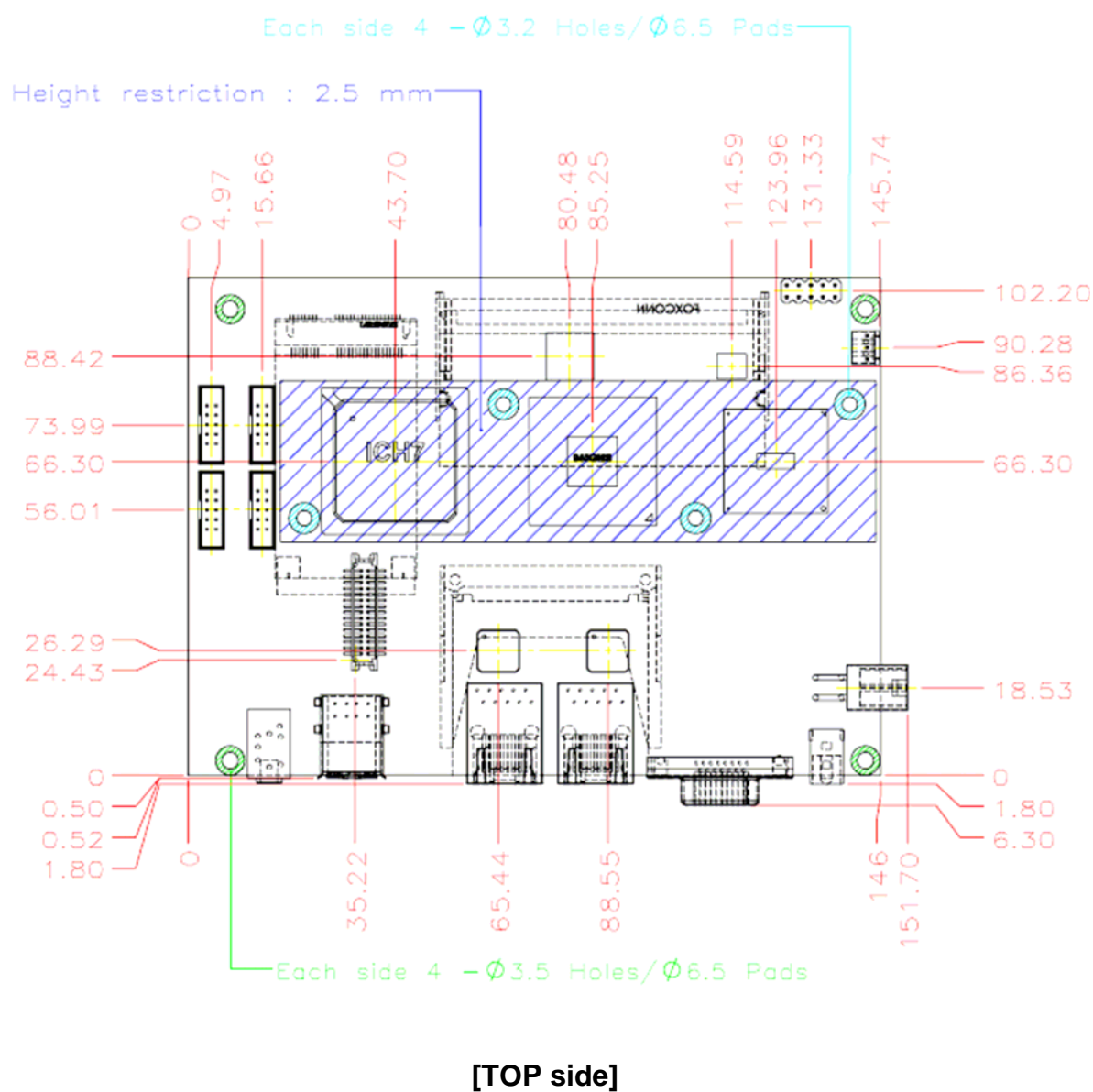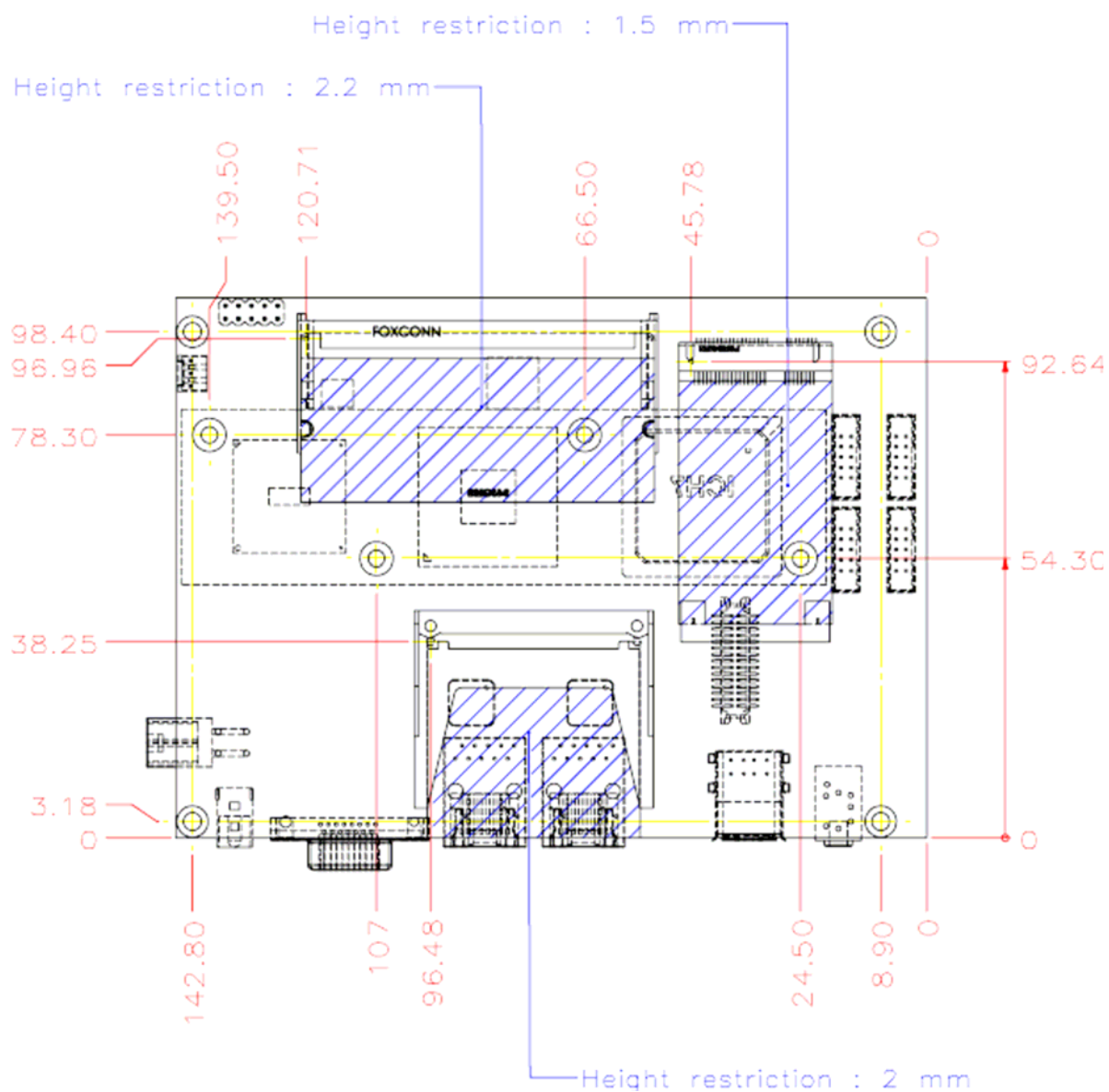
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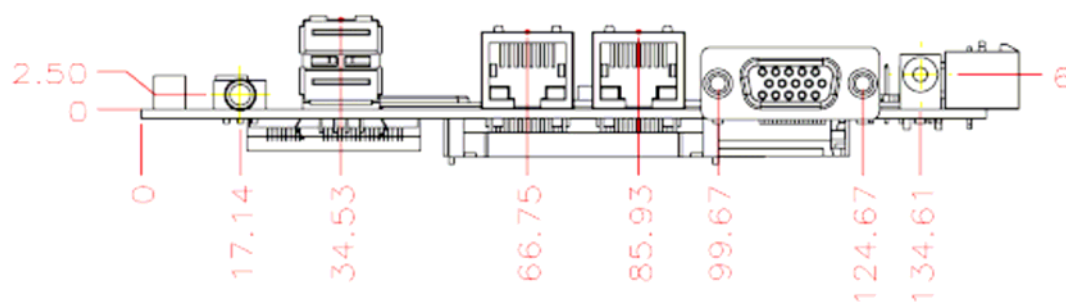
[Rear IO]

1.4 System Architecture

All of details operating relations are shown in PEB-2131VG2A series System Block Diagram.
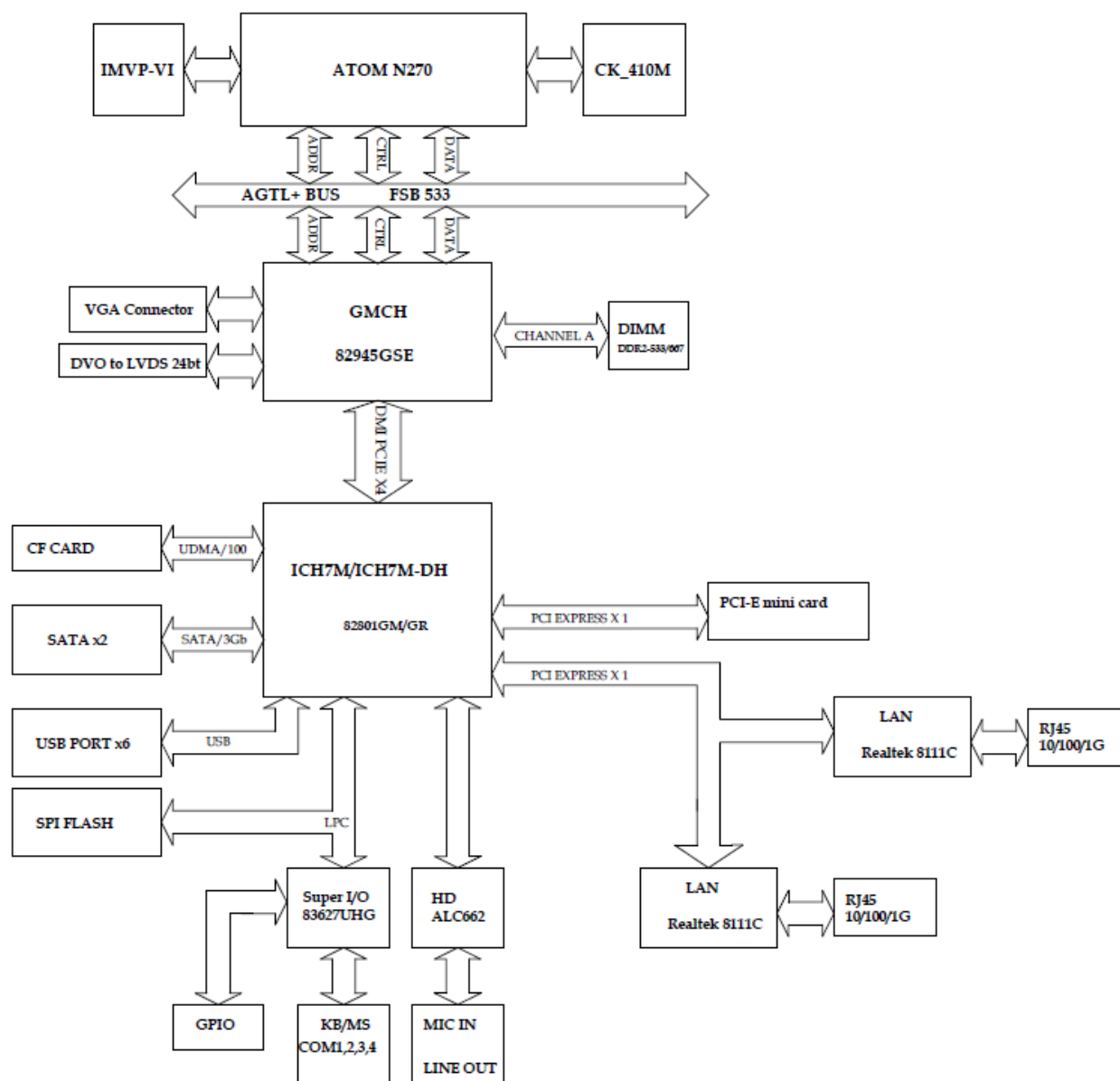
PEB-2131VG2A System Block Diagram

Chapter 2
Hardware Configuration

This chapter gives the definitions and shows the positions of jumpers, headers and connector. All of the configuration jumpers on PEB-2131 are in the proper position. The default settings are indicated with a star sign (★).

2.1   Jumper Setting

For users to customize PEB-2131's features. In the following sections, **Short** means covering a jumper cap over jumper pins; **Open** or **N/C** (Not Connected) means removing a jumper cap from jumper pins. Users can refer to Figure 2-1 for the Jumper and Connector locations.
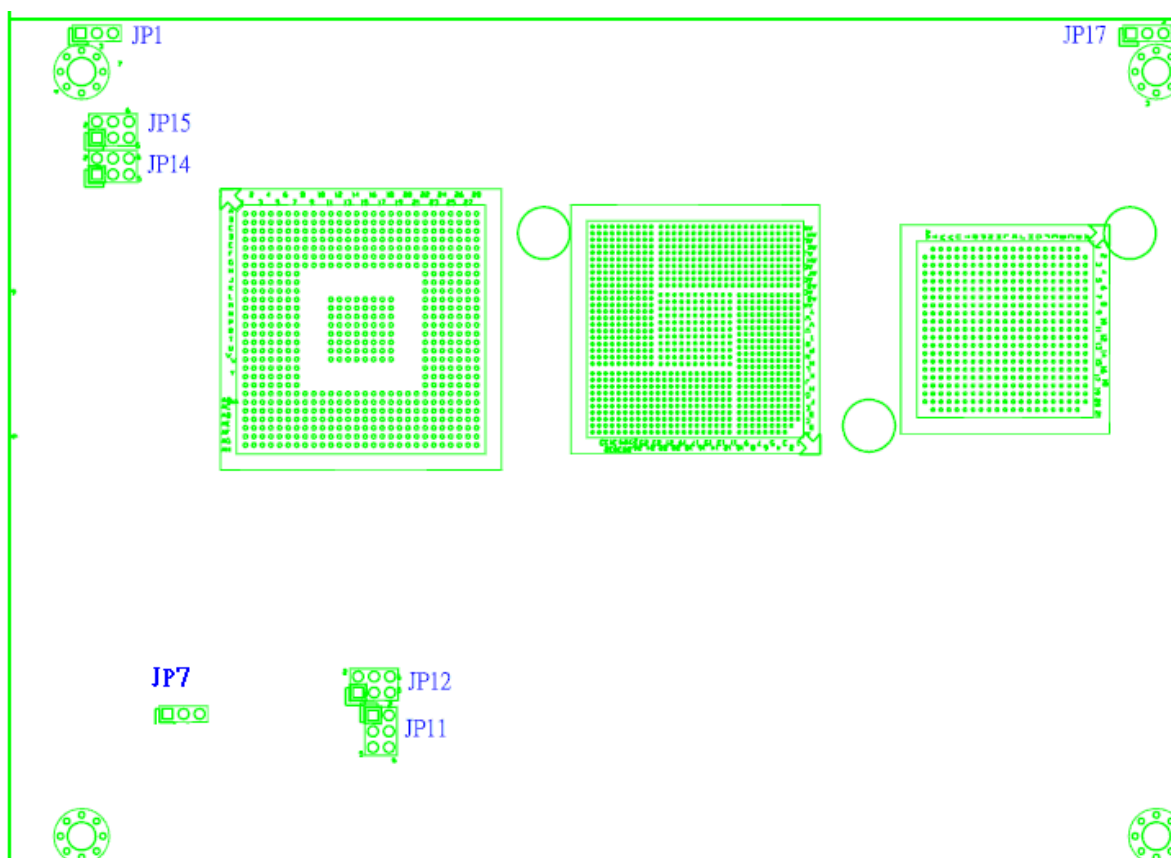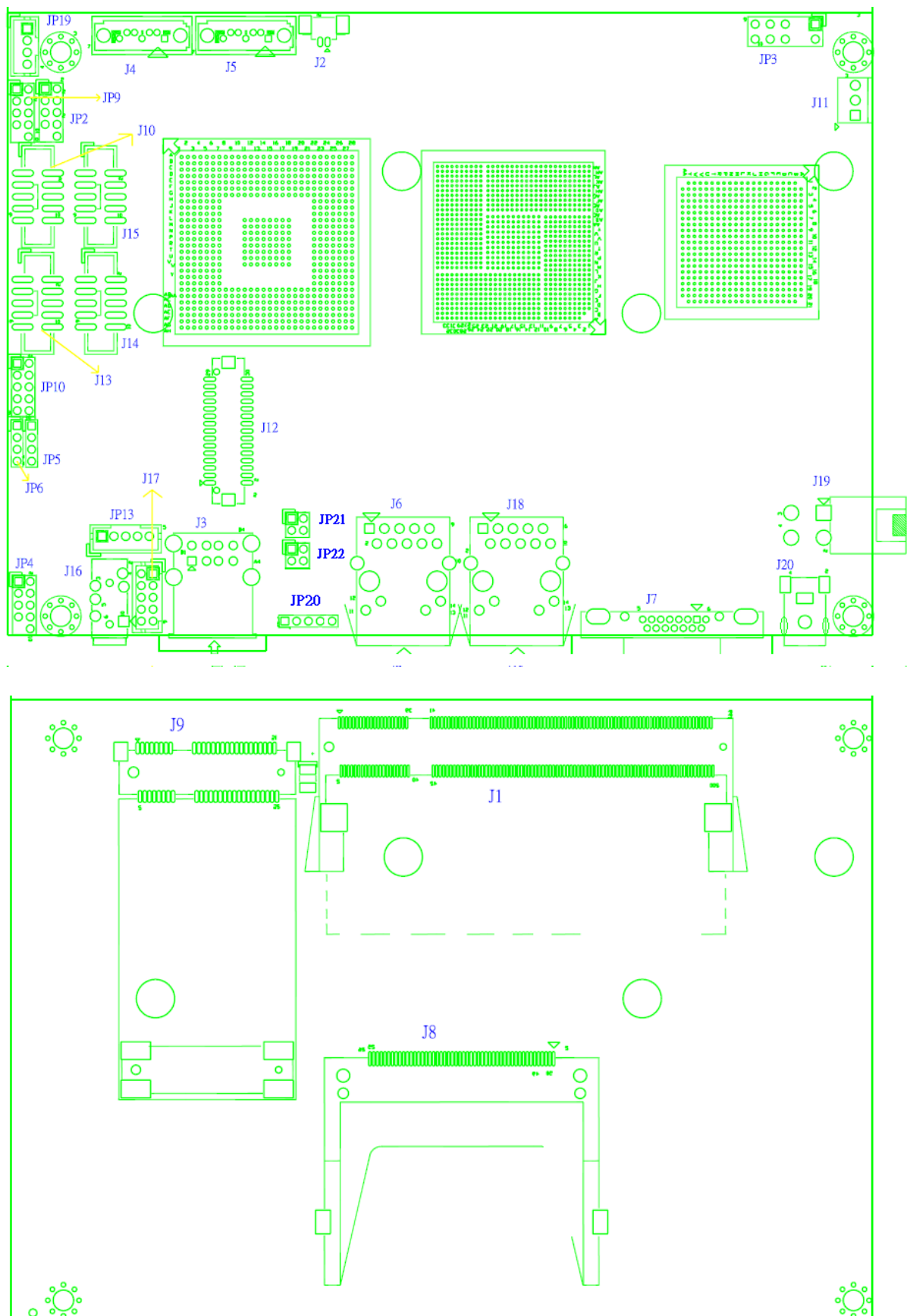
Figure 2-1   PEB-2131VG2A Jumper and Connector Locations

JP1 : CMOS RAM charge/discharge setup

JP1	Function
1-2 short	Charge ★
2-3 short	Clear CMOS

JP2/JP9 : External USB Pin Header

PIN No.	Signal Description	PIN No.	Signal Description
1	USB power (5VSB)	2	USB power (5VSBl)
3	USB DATA A-	4	USB DATA B-
5	USB DATA A+	6	USB DATA B+
7	Ground	8	Ground
	Key(no pin)	10	N/C

JP3 : External PS/2 Keyboard/Mouse Pin Header

PIN No.	Signal Description	PIN No.	Signal Description
1	Mouse Data	2	Keyboard Data
	Key(no pin)		Key (no pin)
5	Ground	6	Ground
7	Power	8	Power
9	Mouse CLK	10	Keyboard CLK

JP5 : POWER LED & HDD LED Pin Header

PIN No.	Signal Description
1	Power LED +
2	Power LED -
3	HDD LED +
4	HDD LED -

JP6 : System Reset & Power Switch Pin Header

PIN No.	Signal Description
1	BP_PWRBTN#
2	GND
3	System Reset
4	GND

JP7 : LVDS Backlight control Enable or Disable

JP7	Function
1-2 short	Disable ★
2-3 short	Enable

JP10 : Super I/O GPIO Interface Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO23 (DRAWER Output)	2	GPIO54
3	GPIO24 (DRAWER Output)	4	GPIO55
5	GPIO22 (DRAWER Input)	6	GPIO56
7	GPIO53	8	GPIO57
9	GND	10	+5V

JP11 : PANEL BACKLIGHT Selection

Pin No.	Signal Description
1-3, 2-4	5V, Active High ★
1-3, 4-6	12V, Active High
3-5,2-4	5V, Active Low
3-5,4-6	12V, Active Low

JP12 : LVDS Panel VDD input voltage selection

JP12	Function
2-4 short	VDD=3.3V ★
3-4 short	VDD=12V
4-6 short	VDD=5V

Note:

Wrong voltage selection may damage the LVDS panel. Please survey LVDS panel's VDD before setup this jumper setting.

JP13 : BACK LIGHT PWR Connector

PIN No.	Signal Description
1	ENABLE
2	GND
3	+12V
4	GND
	VCC

JP14 : COM1 & COM2 Port RI Voltage selection

JP14	Function
1-3 short	VDD=5V For COM 1 port RI Voltage ★
3-5 short	VDD=12V For COM1 port RI Voltage
2-4 short	VDD=5V For COM 2 port RI Voltage ★
4-6 short	VDD=12V For COM2 port RI Voltage

Note:
Wrong voltage selection may damage the COM Port device. Please survey COM port device's RI before setup this jumper setting.

JP15 : COM3 & COM4 Port RI Voltage selection

JP15	Function
1-3 short	VDD=5V For COM 3 port RI Voltage ★
3-5 short	VDD=12V For COM3 port RI Voltage
2-4 short	VDD=5V For COM4 port RI Voltage ★
4-6 short	VDD=12V For COM4 port RI Voltage

Note:
Wrong voltage selection may damage the COM Port device . Please survey COM port device's RI before setup this jumper setting.

JP17 : AUTO POWER ON selection

JP17	Function
1-2 short	Disable ★
2-3 short	Enable

JP19 : External +5V/+12V Pin HDR

PIN No.	Signal Description
1	+12V
2	GND
3	GND
4	+5V

JP20 : External USB Pin Header

PIN No.	Signal Description
1	USB power (5VSB)
2	USB DATA A-
3	USB DATA A+
4	Ground
5	Chassis Ground

JP21/JP22 : Ethernet LED

PIN No.	Signal Description	PIN No.	Signal Description
1	LINK1000	2	LINK100
3	LINEK	4	ACT

2.2   Connector Allocation

I/O peripheral devices are connected to the interface connectors.

Connector Function List

Connector	Function	Remark
J1	DDR2 DIMM	
J2	Battery connector	
J3	USB Dual Connector	
J4 ; J5	SATA Connector	
J6	RJ45 LAN2 Connector	
J7	CRT Connector	
J8	CF Connector	
J9	Mini PCI-E Socket	
J10	COM2 Pin Header	2x5P _2.0mm
J11	System FAN	
J12	LVDS Connector	DF13-30DP
J13/J14/ J15	COM1 ; COM3 ; COM4 Pin Header	2x5P _2.0mm
J16	Audio JACK LINE_OUT	
J17	Audio LINE_OUT & LINE_IN & MIC Pin HDR	Wafer 2mm
J18	RJ45 LAN1 Connector	
J19	POWER DC +12V Connector	
J20	POWER DC JACK	
JP2/JP9	External USB Pin Header	2x5P *2.0mm*
JP3	Keyboard/Mouse Pin Header	
JP5	POWER LED & HDD LED Pin Header	
JP6	System Reset & Power Switch Pin Header	

JP10	GPIO Pin Header	
JP13	BACK LIGHT PWR Connector	Wafer 2mm
JP19	External +5V/+12V Pin HDR	Wafer 2mm
JP20	External USB Pin Header	5px1 2.0mm
JP21/JP22	Ethernet LED	2px2 2.0mm

Pin Assignments of Connectors

J9 : Mini PCI-E Socket

PIN No.	Signal Description	PIN No.	Signal Description
1	WAKE#	2	+3.3V
3	N/C	4	GND
5	N/C	6	+1.5V
7	CLKREQ#	8	N/C
9	GND	10	N/C
11	PCI-E _CLK-	12	N/C
13	PCI-E_CLK+	14	N/C
15	GND	16	N/C
	KEY (NO Pin)		KEY (NO Pin)
17	N/C	18	GND
19	N/C	20	N/C
21	GND	22	RESET
23	PCI-E_RX-	24	+3V_UDAL
25	PCI-E_RX+	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCI-E_TX-	32	SMB_DATA
33	PCI-E _TX+	34	GND
35	GND	36	USB_DATA-
37	N/C	38	USB_DATA+
39	N/C	40	GND
41	N/C	42	N/C
43	N/C	44	N/C
45	N/C	46	N/C
47	N/C	48	+1.5V
49	N/C	50	GND
51	N/C	52	+3.3V

J10/J13/J14/J15 : COM Port Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	DCD#	2	DSR#
3	RXD#	4	RTS#
5	TXD#	6	CTS#
7	DTR#	8	RI Voltage of 5V or 12V
9	GND	10	GND

J12 : LVDS Connector

PIN No.	Signal Description	PIN No.	Signal Description
1	LCD1DO0+	2	LCD1DO0-
3	LCD1DO1+	4	LCD1DO1-
5	LCD1DO2+	6	LCD1DO2-
7	LCD1DO3+	8	LCD1DO3-
9	LCD1CLK+	10	LCD1CLK-
11	LCD2DO0+	12	LCD2DO0-
13	LCD2DO1+	14	LCD2DO1-
15	LCD2DO2+	16	LCD2DO2-
17	LCD2DO3+	18	LCD2DO3-
19	LCD2CLK+	20	LCD2CLK-
21	LCLK1	22	LDATA1
23	GND	24	N/C
25	GND	26	GND
27	LVDS VDD	28	LVDS VDD
29	N/C	30	LVDS VDD
9	GND	10	GND

J17 : Audio LINE_OUT & LINE_IN & MIC Pin HDR

PIN No.	Signal Description	PIN No.	Signal Description
1	MIC_L	2	GND
3	LINE_IN_L	4	GND
5	LINE_IN_R	6	GND
7	LINE_OUT_L	8	GND
9	LINE_OUT_R	10	MIC_R

J19 : POWER DC +12V Connector

PIN No.	Signal Description
1	GND
2	GND
3	+12V
4	+12V

Chapter 3
System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you set up onboard PCI device and handle Watch Dog Timer (WDT) and operation of GPIO in software programming.

3.1   Intel ATOM processor N270 CPU

Configuring System Bus

PEB-2131VG2A will automatically detect the CPU FSB 533MHz CMOS used. CPU speed of Intel ATOM Processor for Mobile can be detected automatically.

3.2   Main Memory

PEB-2131VG2A provides 1 x 200-pin SO-DIMM sockets which supports 533/400 DDR2-SDRAM as main memory, Non-ECC (Error Checking and Correcting), non-register functions. The maximum memory size can be up to 2GB capacity. Memory clock and related settings can be detected by BIOS via SPD interface.

For system compatibility and stability, do not use memory module without brand. Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install memory module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

CPU FSB	Bandwidth
533MHz	4.2GB/s

Memory Frequency	Single Channel DDR Bandwidth
533MHz	4.2GB/s
400 MHz	3.2GB/s

Note:

To maintain system stability, don't change any of DRAM parameters in BIOS setup to upgrade system performance without acquiring technical information.

Memory frequency / CPU FSB synchronization

PEB-2131VG2A supports different memory frequencies depending on the CPU front side bus and the type of DDR2-SDRAM DIMM.

CPU FSB	Memory Frequency
533MHz	533/400MHz

3.3 Installing the Single Board Computer

To install your PEB-2131VG2A into standard chassis or proprietary environment, please perform the following:

Step 1 : Check all jumpers setting on proper position
Step 2 : Install and configure   memory module on right position
Step 3 : Place PEB-2131VG2A into the dedicated position in the system
Step 4 : Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that SBC is properly inserted and fixed by mechanism.

Note:

Please refer to section 3.3.1 to 3.3.4 to install INF/VGA/LAN/Audio drivers.

3.3.1 Chipset Component Driver

The chipset on PEB-2131VG2A is a new chipset that a few old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 2000 /XP, please install its INF before any of other Drivers are installed. You can find very easily this chipset component driver in PEB-2131VG2A CD-title.

3.3.2　Intel Integrated Graphics GMCH Chip

Using Intel® 945GSE GMCH High performance graphic integrated chipset is aimed to gain an outstanding graphic performance. Shared 8 accompany it to 128MB system DDR2-SDRAM with Total Graphics Memory. This combination makes PEB-2131VG2A, an excellent piece of multimedia hardware.

With no additional video adaptor, this onboard video will usually be the system display output. By adjusting the BIOS setting to disable on-board VGA, an add-on PCI, VGA Card can take over the system display.

Drivers Support

Please find Springdale GMCH driver in the PEB-2131VG2A CD-title. Drivers support Windows-2000, Windows XP.

3.3.3　Realtek Gigabit Ethernet Controller

Drivers Support

Please find Realtek RTL8111C LAN driver in /Ethernet directory of PEB-2131VG2A CD-title. The drivers support Windows 2000 /XP.

LED Indicator (for LAN status)

PEB-2131VG2A provides two LED indicators to report Realtek RTL8111C Gigabit Ethernet interface status. Please refer to the table below as a quick reference guide.

RTL8111C	Color	Name of LED	Operation of Ethernet Port		
			Linked	Active	
Status LED	Green	LAN Linked & Active LED	On	Blinking	
Speed LED	Orange	LAN speed LED	Giga Mbps	100 Mbps	10 Mbps
	Green		Orange	Green	Off

3.3.4　Audio Controller

Please find Realtek ALC262 Audio driver form PEB-2131VG2A CD-title. The drivers support Windows 2000 /XP.

3.4   Clear CMOS Operation

The following table indicates how to enable/disable Clear CMOS Function hardware circuit by putting jumpers at proper position.

JP1	Function
1-2 Short	Charge (Normal) ★
2-3 Short	Clear CMOS (Clear)

3.5   WDT Function

WDT Programming Guide

There are two PNP I/O port addresses that can be used to configure WDT,

1) 0x2E:EFIR (Extended Function Index Register, for identifying CR index number)
2) 0x2F:EFDR (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of WDT.

```
// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);

// Select Logic Device 8
outp(0x002E, 0x07);
outp(0x002F, 0x08);

// Assign Pin 77 WDTO Enable
outp(0x002E, 0x30);
outp(0x002F, inp(0x002F) & 0x01);

// Select Count Mode
outp(0x002E, 0xF5);
outp(0x002F, (inp(0x002F) & 0xF7) | ( Count-mode Register & 0x08));

// Specify Time-out Value
outp(0x002E, 0xF6);
outp(0x002F, Time-out Value Register );

// Disable WDT reset by keyboard/mouse interrupts
outp(0x002E, 0xF7);
outp(0x002F, 0x00);
```

// Select Logic Device A
outp(0x002E, 0x07);
outp(0x002F, 0x0A);

// Active Logic Device A
outp(0x002E, 0xE7);
outp(0x002F, (inp(0x002F) & 0xF0) | (Sel WDTO RST Register));

// Exit Extended Function Mode
outp(0x002E, 0xAA);

Definitions of Variables:

Value of Count-mode Register :
1) 0x00 -- Count down in seconds (Bit3=0)
2) 0x08 -- Count down in minutes (Bit3=1)
Value of Time-out Value Register :
1) 0x00 -- Time-out Disable
2) 0x01~0xFF -- Value for counting down
Value of *Sel WDTO RST Register*
1) 0x00 -- RST by LPC_RST (Bit3=0)
2) 0x08 -- RST by PWR_OK (Bit3=1)

3.6   GPIO

GPIO From Super I/O

The PEB-2131VG2A provides 4 input/output ports from SIO that can be individually configured to perform a simple basic I/O function. Users can configure each individual port to become an input or output port by programming register bit of I/O Selection. To invert port value, the setting of Inversion Register has to be made. Port values can be set to read or write through Data Register.

J13 : GPIO Connector from Super I/O

JP10
Header5Px2/2.54mm
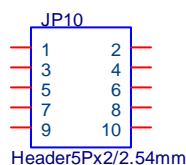
PIN No.	Signal Description	PIN No.	Signal Description
1	GPIO Port50/OUT1(GP23)	2	GPIO Port54
3	GPIO Port51/OUT2(GP24)	4	GPIO Port55
5	GPIO Port52/IN-SENSE(GP22)	6	GPIO Port56
7	GPIO Port53	8	GPIO Port57
9	GND	10	5V

PS: Pin1 & 3 & 5 is that of Cash Drawer controls GPIO port

PEB-2131VG2A GPIO Programming Guide

There are two PNP I/O port addresses that can be used to configure GPIO ports,

1) 0x2E - **EFER** (Extended Function Enable Register, for entering Extended Function Mode)
   - **EFIR** (Extended Function Index Register, for identifying CR index number)

2) 0x2F - **EFDR** (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of GPIOs.

```
// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);

// Assign Pin1-4 and Pin125-128 to be GPIO port 1
outp(0x002E, 0x29);
outp(0x002F, 0x7F);

// Select Logic Device 8
outp(0x002E, 0x07);
outp(0x002F, 0x08);

// Active GPIO 5
outp(0x002E, 0x30);
outp(0x002F, 0x03);

// Select I/O Mode
outp(0x002E, 0xE0);
outp(0x002F, (inp(0x002F) & 0xF0) | ( I/O Selection Register & 0x0F));

// Select Inversion Mode
outp(0x002E, 0XE2);
outp(0x002F, (inp(0x002F) & 0xF0) | ( Inversion Register & 0x0F));

// Access GPIO ports
outp(0x002E, 0XE1);
outp(0x002F, (inp(0x002F) & 0xF0) | ( Output Data & 0x0F));
or Input Data = inp(0x002F);

// Exit Extended Function Mode
outp(0x002E, 0xAA);
```

Definitions of Variables:

Each bit in the lower nibble of each Register represents the setting of a GPIO port.

Bit0 vs. GPIO port 0
Bit1 vs. GPIO port 1
Bit2 vs. GPIO port 2
Bit3 vs. GPIO port 3
Bit4 vs. GPIO port 5
Bit5 vs. GPIO port 6
Bit6 vs. GPIO port 7
Bit7 vs. GPIO port 8

Value of **Inversion Register** :

Only lower nibble is available for this function.

When set to a '1', the incoming/outgoing port value is inverted.

When set to a '0', the incoming/outgoing port value is the same as in Data Register.

Value of **I/O Selection Register** :

Only lower nibble is available for this function.

When set to a '1', respective GPIO port is programmed as an input port.

When set to a '0', respective GPIO port is programmed as an output port.

Value of **Output Data** / **Input Data** :

Only lower nibble is available for this function.

If a port is assigned to be an output port, then its respective bit can be read/written.

If a port is assigned to be an input port, then its respective bit can be read only.

Notes:

1) All the Buffered Digital Outputs are open-drain amplified form corresponding GPIO ports.

2) Some other functions may occupy the high nibble of the registers. Altering any content in high nibble will be undesired.

Chapter 4
BIOS Setup Information

PEB-2131VG2A is equipped with the AWARD BIOS stored in Flash ROM. These BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, PEB-2131VG2A communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1   Entering Setup

Turn on or reboot the computer. When the message "Hit <DEL> if you want to run SETUP" appears, press <Del> key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try "COLD START" again by turning it OFF and then ON, or touch the "RESET" button. You may also restart from "WARM START" by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

General Help	
↑ ↓ → ←	: Move
Enter	: Select
+ / - /PU /PD	: Value
ESC	: Exit
F1	: General Help
F2	: Item Help
F5	: Previous Values
F6	: Fail-Safe Defaults
F7	: Optimized Defaults
F9	: Menu in BIOS
F10	: Save

4.2   Main Menu

Once you enter PEB-2131VG2A AWARD BIOS CMOS Setup Utility, a Main Menu is presented. The Main Menu allows user to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.

Phoenix- AwardBIOS CMOS Setup Utility

▶ Standard CMOS Features	Load Fail-Safe Defaults
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power Management Setup	Save & Exit Setup
▶ PnP/PCI Configurations	Exit Without Saving
▶ PC Health Status	

ESC : Quit   ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup

Time, Date, Hard Disk Type …

Note:

It is strongly recommended to reload Optimal Setting if CMOS is lost or BIOS is updated.

4.3   Standard CMOS Setup Menu

This setup page includes all the items in standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.

<div align="center">

Phoenix- AwardBIOS CMOS Setup Utility
Standard CMOS Features

</div>

Date (mm:dd:yy)	Tue, Nov 24 2009	Item Help
Time (hh:mm:ss)	10 : 20 : 30	
		Menu Level ▶
▶ IDE Channel 0 Master	[None]	
▶ IDE Channel 0 Slave	[None]	Change the day, month,
▶ IDE Channel 1 Master	[None]	year and century
▶ IDE Channel 1 Slave	[None]	
Video	[EGA/VGA]	
Halt On	[All, But Keyboard]	
Base Memory	639K	
Extended Memory	1038336K	
Total Memory	1039360K	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Note:
Oblique items are base on memory capacity which user adopts on single board.

■ **Menu Selections**

Item	Options	Description
Date	mm:dd:yy	Change the day, month, year and century
Time	hh:mm:ss	Change the internal clock
IDE Channel 0 Master IDE Channel 0 Slave	Options are in its sub menu	Press <Enter> to enter next page for detail hard druve settings
Video	EGA/VGA, CGA 40, CGA 80, MONO	Select the default video device
Halt On	All Errors No Errors All , But Keyboard	Allows you to determine whether the system will stop for an error during the POST.
Base Memory	640K	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

4.4   IDE Adaptors Setup Menu

The IDE adapters control the SATA devices, such as hard disk drive or CD-ROM drive. It uses a separate sub menu to configure each hard disk drive.

Phoenix- AwardBIOS CMOS Setup Utility
IDE Channel 0   Master (&Slave)

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Channel 0 Master	[Auto]	
Access Mode	[Auto]	Menu Level ▶
Capacity	0 MB	
Cylinder	0	To atuo-detect the HDD's size, head … on this channel
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Note:
The oblique items are meaning base on what kind of storage device user employs.

■ Menu Selections

Item	Options	Description
SATA HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Channel 0 Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Access Mode	CHS, LBA Large, Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min=0, Max=65535	Set the number of cylinders for hard disk
Head	Min=0, Max=255	Set the number of read/write heads
Precomp	Min=0, Max=65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min=0, Max=65535	****
Sector	Min=0, Max=255	Number of sectors per track

4.5   Advanced BIOS Features

This section allows you to configure your system for basic operation.   You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Phoenix- AwardBIOS CMOS Setup Utility
Advanced BIOS Features

		Item Help
▶ CPU Feature	[Press Enter]	
▶ Hard Disk Boot Priority	[Press Enter]	
Virus Warning	[Disabled]	Menu Level ▶
CPU L1 &L2 Cache	[Enabled]	
Hyper-Threading Technology	[Enabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[LS120]	
Boot Other Device	[Enabled]	
Boot up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
X Typematic Rate (Chars/Sec)	6	
X Typematic Delay (Msec)	250	
Security Option	[Setup]	
X APIC Mode	Enabled	
MPS Version Control For OS	[1.4]	
OS Select For DRAM > 64MB	[Non-OS2]	
Report No FDD For WIN 95	[No]	
Full Screen LOGO Show	[Disabled]	
Small Logo(EPA) Show	[Disabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Phoenix- AwardBIOS CMOS Setup Utility
CPU Feature

		Item Help
Delay Prior to Thermal	[16 Min]	
Limit CPUID MaxVal		Menu Level ▶
[Disabled]		
C1E Function		
[Disabled]		
Execute Disabled Bit	[Enabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Delay Prior to Thermal

The Delay Prior To Thermal BIOS feature controls the activation of the Thermal Monitor's automatic mode. It allows you to determine when the Pentium 4's Thermal Monitor should be activated in automatic mode after the system boots. For example, with the default value of 16 Minutes, the BIOS activates the Thermal Monitor in automatic mode 16 minutes after the system starts booting up.

The choice: 4 Min, 8 Min, 16 Min, 32 Min.

Limit CPUID MaxVal

Allows you to determine whether to limit CPUID maximum value.

The choice: Enabled, Disabled.

C1E Function

CPU C1E Function Select.

The choice: Auto, Disabled.

Execute Disabled Bit

When disabled, forces the XD feature flag to always return 0.

The choice: Enabled, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority

1. Bootable ADD-in Cards	Item Help
	Menu Level ▶ Use < ↑ > or < ↓ > to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

Hard Disk Boot Priority

Select Hard Disk Boot Device Priority.   Use < ↑ > or < ↓ > to select a device, then press <+> to move it up, or <-> to move it down the list.   Press <ESC> to exit this menu.

Virus Warning

Allow you to choose the Virus warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU L1 &L2 Cache

This setting enables the CPU internal cache (L1&L2 cache)

The choice: Enabled, Disabled

Hyper-Threading Technology

Please note that this feature is only working for operating system with multi processors mode supported.

The choice: Enabled, Disabled

Quick Power On Self Test

Allows the system skip certain tests while booting. This will decrease the time needed to boot the system.

Enabled	Enable Cache
Disabled	Disable Cache

First/Second/Third Boot Device

Select your Boot Device Priority.

The choice: LS120, Hard Disk, CDROM, ZIP 100, USB-FDD, USB-ZIP, USB-CDROM , LAN and Disabled.

Boot Other Device

Select your Boot Device Priority.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off, On.

Gate A20 Option

Fast-lets chipsets control GateA20 and Normal – a pin in the keyboard controller controls GateA20. Default is fast.

The choice: Normal, Fast.

Typematic Rate Setting

Keyboard repeat at a rate determined by the keyboard controller – when enabled, the typematic rate and typematic delay can de select.

The choice: Disabled, Enabled.

※Typematic Rate (Chars/sec)

The rate is which character repeats when you hold down a key.

The choice: 6, 8, 10, 12, 15, 20, 24, and 30. (Default 6)

※Typematic delay (Msec)

The delay before keystrokes begin to repeat.

The choice: 250, 500, 750, and 1000. (Default 250)

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

※APIC Mode

Advanced Programmable interrupt controller. This option allows system to have Intel's new PIC standard supporting more interrupt lines for onboard devices.

Note:
This option should be only enabled when system is running on ACPI power management mode.

The choice: Enabled.

MPS Version Control For OS

MultiProcessor Specification Support.

The choice: 1.1, 1.4

OS Select For DRAM > 64MB

Select OS/2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Report No FDD for WIN 95

Select "Yes" to release IRQ6 when the system contains no floppy drive, for compatibility with Windows 95 logo certification. In the Integrated Peripherals screen, select Disabled for the Onboard FDD Controller field.

The choice: No, Yes.

Full   Screen LOGO Show

The choice: Enabled, Disabled.

Small Logo (EPA) Show

The choice: Enabled, Disabled.

4.6　　　Advanced Chipset Features

This section allows you to configure the system based on the specific features of the Intel US15W chipset. This chipset manages bus speeds and access to system memory resources, such as DDR2 SDAM. It must be stated that these items should never need to be altered.　 The default settings have been chosen because they provide the best operating conditions for the system.　 The only time user might consider making any changes would be if you discovered that data was being lost while during system operation.

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Phoenix- AwardBIOS CMOS Setup Utility

Advanced Chipset Features
</div>

```
┌──────────────────────────────────────────────────┬────────────────────────┐
│   DRAM Timing Selectable      [By SPD]             │       Item Help        │
│ X   CAS Latency Time          Auto                 ├────────────────────────┤
│ X   DRAM RAS# to CAS# Delay   Auto                 │                        │
│ X   DRAM RAS# Precharge       Auto                 │  Menu Level      ▶     │
│ X   Precharge dealy [tRAS]    Auto                 │                        │
│ X   System memory Frequency   Auto                 │                        │
│   SLP_S4# Assertion Width     [4 to 5 Sec.]        │                        │
│   System BIOS Cacheable       [Enabled]            │                        │
│   Video BIOS Cacheable        [Disabled]           │                        │
│   Memory Hole At 15M-16M         [Disable]         │                        │
│ ▶ PCI   Express Root port Func   [press Enter]     │                        │
│                                                    │                        │
│   **    VGA Setting   **                           │                        │
│   On-Chip Frame Buffer Size   [8MB]                │                        │
│   DVMT Mode                   [DVMT]               │                        │
│   DVMT/FIXED Memory Size      [128MB]              │                        │
│   Boot Display                [CRT+LVDS]           │                        │
│   Panel Scaling               [Auto]               │                        │
│   Panel Number                [800X600 18bit 1ch]  │                        │
├──────────────────────────────────────────────────┴────────────────────────┤
│ ↑↓→←: Move    Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help │
│         F5: Previous Values      F6: Fail-Safe Defaults      F7: Optimized Defaults │
└────────────────────────────────────────────────────────────────────────────┘
```

DRAM Timing Selectable

The choice: Manual, By SPD

SLP_S4# Assertion Width.

The choice:　 1 to 2 Sec, 2 to 3 Sec, 3 to 4 Sec, 4 to 5 Sec.

System BIOS Cacheable.

When enabled, the system BIOS ROM at F0000h-FFFFFh.

The choice: Enabled, Disabled.

Video BIOS Cacheable

When enabled, the video BIOS ROM at C0000h-F7FFFh.

The choice: Enabled, Disabled.

Memory Hole At 15M-16M

The choice: Enabled, Disabled.

PCI　Express Root port Func

The choice: Auto, Enabled, Disabled.

On-Chip Frame Buffer Size

Users can set the display memory size that shared from main memory.

The choice: 1MB, 8MB.

DVMT Mode:

The choice: FIXED,DVMT,BOTH

DVMT/FIXED Memory

The choice: 64MB,128MB,224MB

Boot Display

The choice: CRT, LVDS,CRT+LVDS

Panel Scaling

The choice:Auto, On, Off

Panel Number

The choice: 800X600　18bit　1ch, 1024X768　18bit　1ch, 1024X768　24bit　2ch, 1280X1024　24bit　2ch

4.7　　　Integrated Peripherals

Phoenix- AwardBIOS CMOS Setup Utility
Integrated Peripherals

		Item Help
▶ OnChip IDE Device	[Press Enter]	
▶ Onboard Device	[Press Enter]	
▶ Super IO Device	[Press Enter]	Menu Level　　▶
Watch Dog Timer Select	[Disabled]	
Onboard LAN Boot ROM init	[Disabled]	

↑↓→←: Move　　Enter: Select　　+/-/PU/PD: Value　　F10: Save　　ESC: Exit　　F1: General Help
F5: Previous Values　　　　F6: Fail-Safe Defaults　　　　F7: Optimized Defaults

OnChip IDE Device

Phoenix- AwardBIOS CMOS Setup Utility
OnChip IDE Device

		Item Help
IDE HDD Block Mode	[Enabled]	
IDE DMA transfer access	[Enabled]	
On-Chip Primary PCI IDE	[Enabled]	Menu Level ▶
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	If your IDE hard drive
IDE Primary Master UDMA	[Auto]	supports block mode
IDE Primary Slave UDMA	[Auto]	select Enabled for
On-Chip Secondary PCI IDE	[Enabled]	automatic detection of
IDE Secondary Master PIO	[Auto]	the optimal number of
IDE Secondary Slave PIO	[Auto]	block read/writes per
IDE Secondary Master UDMA	[Auto]	sector the drive can
IDE Secondary Slave UDMA	[Auto]	support.
*** On-Chip Serial ATA Setting ***		
On-Chip Serial ATA	[Combined Mode]	
PATA IDE Mode	[Secondary]	
SATA　　　　　　　　　　　Port		
P0,P2 is Primary		

↑↓→←: Move　　Enter: Select　　+/-/PU/PD: Value　　F10: Save　　ESC: Exit　　F1: General Help
F5: Previous Values　　　　F6: Fail-Safe Defaults　　　　F7: Optimized Defaults

IDE HDD Block Mode

If IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

IDE DMA transfer access

The choice: Enabled, Disabled.

On-Chip Primary/ Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels.   Select Enabled to activate the primary IDE interface.   Select Disabled to deactivate this interface.

The choice: Enabled, Disabled

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields allow set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports.   Modes 0 through 4 provide successively increased performance.   In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if IDE hard drive supports and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver).   If your hard drive and system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

The choice: Auto, Disabled.

On-Chip Serial ATA

[Disabled]: Disabled SATA Controller. [Auto]: Auto arrange by BIOS. [Combined Mode]: PATA and SATA are combined. Max. of 2 IDE drives in each channel. [Enhanced Mode]: Enable both SATA and PATA. Max. of 5 IDE drives are supported.
[SATA Only]: SATA is operating in legacy mode.

The Choice: Disabled, Auto, Combined Mode, Enhanced Mode, SATA Only.

PATA IDE Mode

The choice: Secondary.

Onboard Device

Phoenix- AwardBIOS CMOS Setup Utility
Onboard Device

		Item Help
USB Controller [Enabled]		
USB 2.0 Controller [Enabled]		Menu Level ▶
USB Keyboard Support [Enabled]		[Enabled] or [Disabled]
USB Mouse Support [Disable]		universal host controller
AC97 Audio Select [Enabled]		interface for universal serial
		bus.
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help		
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

USB   Controller

[Enabled] or [Disabled] Universal host controller interface for universal serial bus.

The choice: Enabled, Disabled.

USB 2.0 Controller

[Enabled] or [Disabled] Enhanced host controller interface for universal serial bus.

The choice: Enabled, Disabled.

USB Keyboard/Mouse Support

[Enabled] or [Disabled] Legacy support of USB keyboard or mouse.

The choice: Disabled, Enabled.

AC97 Audio select

The choice: Disabled, Enabled.

SuperIO Device

Phoenix- AwardBIOS CMOS Setup Utility
SuperIO Device

POWER ON Function	[BUTTON ONLY]	Item Help
Onboard Serial Port 1	[3F8]	
Onboard UART 1 IRQ	[IRQ4]	Menu Level ▶
Onboard Serial Port 2	[2F8]	
Onboard UART 2 IRQ	[IRQ3]	
Onboard Serial Port 3	[3E8]	
Onboard UART 3 IRQ	[IRQ5]	
Onboard Serial Port 4	[2E8]	
Onboard UART 4 IRQ	[IRQ10]	
PWRON After PWR-Fail	[Off]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Onboard Serial Port 1/Port 2/ Port 3/ Port 4/

The choice: Disabled, 3F8, 2F8, 3E8, 2E8.

Onboard UART Port 1/Port 2/ Port 3/ Port 4/

The choice: IRQ4, IRQ3, IRQ5, IRQ10, IRQ9, IRQ7, IRQ11

PWRON After PWR-Fail

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

The choice: Off, On

Watch Dog Timer Select

This BIOS testing option is able to reset the system according to the selected table.

The choice: Disabled, 10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, and 4 Min.

Onboard LAN Boot ROM init

The choice: Disabled, Enabled.

4.8 Power Management Setup

The Power Management Setup allows configuration of the system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Phoenix- AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function	[Enabled]	Item Help
ACPI Suspend Type	[S1(POS)]	
X Run VGABIOS if S3 Resume	Auto	Menu Level ▶
Power Management	[User Define]	
Video Off Method	[DPMS]	
Video Off In Suspend	[Yes]	
Suspend Type	[Stop Grant]	
Suspend Mode	[Disabled]	
HDD Power Down	[Disabled]	
Soft-Off by PWR-BTTN	[Instant-Off]	
Wake Up by Onboard LAN	[Enabled]	
Resume by Alarm	[Disabled]	
X Date(of Month) Alarm	0	
X Time(hh:mm:ss) Alarm	0 : 0 :0	
** Reaload Global Tumer Events **		
Primary IDE 0	[Disabled]	
Primary IDE 1	[Disabled]	
Secondary IDE 0	[Disabled]	
Secondary IDE 1	[Disabled]	
FDD, COM, LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

ACPI Suspend Type

To decide which ACPI suspend mode to use.

The choice: S1(POS), S3 (STR) .

Run VGA BIOS if S3 Resume

The choice: Auto, Yes, No.

Power Management

This category allows selecting the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 Min., and HDD Power Down = 1 Min.
User Defined	Allows you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 Hour and HDD Power Down ranges from 1 Min. to 15 Min.

Video off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend

This allows user to enable/disable video off in Suspend Mode.

The choice: Yes, No.

Suspend Type

The choice: Stop Grant, PwrOn suspend.

Suspend Mode

After the set time of system inactivity, all devices except CPU will be shut off.

The choice: 1 min, 2 min, 4 min, 8 min, 12 min, 20min, 30 min, 40 min, 1 hour.

HDD Power Down

After the set time of system inactivity, the Hard disk drive will be power down while all other devices remain active.

The choice: 1 to 15 minutes.

Soft-Off by PWR-BTTN

This item allows users to set the time to remove the power after the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

Wake Up by Onboard LAN

Allows the system to be awakened from an ACPI sleep state by a wake-up signal from a PCI or PCIe device. Note: To use this function, you need an ATX power supply providing at least 1A on the +5VSB lead.

The choice: Disabled, Enabled.

Resume by Alarm

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply could be powered on if a customized time and day is approached.

The choice: Enabled, Disabled.

※Date(of Month) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choice: 0 ~ 31.

※Time (hh:mm:ss) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choice: hh (0~23), mm (0~59), ss (0 ~59).

Primary/Secondary IDE 0/1

This item is to configure IDE devices being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

FDD, COM, LPT Port

This item is to configure floppy device, COM ports, and parallel port being monitored by system so as to keep system out of suspend mode if the associated device is busy.

The choice: Enabled, Disabled.

PCI PIRQ[A-D]#

This option can be used to detect PCI device activities. If they are activities, the system will go into sleep mode.

The choice: Enabled, Disabled.

4.9 PnP/PCI Configurations

This section describes configuring the PCI bus system.   PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix- AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

		Item Help
Init Display First	[Onboard]	
Reset Configuration Data	[Disabled]	
		Menu Level ▶
Resources Controlled By	[Auto(ESCD)]	
X IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	
** PCI Express relative items **		
Maximum Payload Size	[128]	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

Init Display First

The choice: PCI Slot, Onboard, PCIEx.

Reset Configuration Data

Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

The choice: Enabled, Disabled.

Resource Controlled By

BIOS can automatically configure the entire boot and plug and play compatible devices. If set to Auto, IRQ DMA and memory base address fields can not be selected, since BIOS automatically assigns them.

The choice: Auto (ESCD), Manual.

※IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

The choice: Press Enter.

IRQ-3/IRQ-4/IRQ-5/IRQ-7/IRQ-9/IRQ-10/IRQ-11/IRQ-12/IRQ-14/IRQ-15 assigned to.

The choice: PCI Device, Reserved.

PCI/VGA Palette Snoop

Legacy ISA for devices compliant with the original PC AT bus specification, PCI PnP for devices compliant with the plug and play standard whether designed for PCI bus architecture.

The choice: Enabled, Disabled.

Maximum Payload Size.

Set maximum TLP payload size for the PCI Express device. The unit is byte.
Default 128.

The choice: 128, 256, 512, 1024, 2048, 4096.

4.10   PC Health Status

Phoenix- AwardBIOS CMOS Setup Utility
PC Health Status

CPU Warning Temperature	[Disabled]	Item Help
Current System Temp	45℃ / 113℉	
Current CPU	Temp 41℃ / 105℉	Menu Level ▶
System Fan Speed	0 RPM	
Vcore		
1.12V		
12 V		
11.77V		
3.3V	3.23V	
5V	4.99V	
VBAT(V)	3.26V	
System Fan Smart Fan Temp.	[Disabled]	
X Fan Tolerance Value	5	

↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults

CPU Warning Temperature

This item allows you to set a temperature above which the system will start the beeping warning. Default setting is disabled. This function will only with "ACPI" power management and "S3 (STR)" suspends type.

The choices : Disabled, 50℃ /122℉, 60℃ /140℉, 70℃ /158℉.

System Fan Smart Fan Temp.

The choices : Disabled,   35℃ / 95℉, 45℃ /122℉, 55℃ /140℉.

4.11   Default Menu

Selecting "Defaults" from the main menu shows two options which are described below,

Load Fail-Safe Defaults

When <Enter> is pressed, a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ?   N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When <Enter> is pressed, a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ?   N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.12   Supervisor/User Password Setting

Either supervisor or user password can be setup, or both of then.   The differences between are:

Set Supervisor Password : can enter and change the options of the setup menus.

Set User Password : just can only enter but do not have the right to change the options of the setup menus. When selecting this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory.   You will be asked to confirm the password.   Type the password again and press <Enter>.   You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when prompted to enter the password. A message will confirm the password will be disabled.   Once the password is disabled, the system will reboot and Setup can be entered freely.

PASSWORD DISABLED

When a password has been enabled, user will be prompted to enter it every time user tries to enter Setup.   This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted.   This would prevent unauthorized use of the computer.

User may determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3).   If the Security option is set to "System", the password will be required both at boot and at entry to Setup.   If set to "Setup", prompting only occurs when trying to enter Setup.

4.13   Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)?   Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after system off.   During subsequnet booting of computer, the BIOS configures the system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)?   N

This allows user to exit Setup without storing in CMOS any change.   The previous selections remain in effect.   This exits the Setup utility and restarts your computer.

Chapter 5
Troubleshooting

This chapter provides a few useful tips to quickly get PEB-2131VG2A running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 Hardware Quick Installation

DC 12V Power Input

Unlike other Single board computer, PEB-2131VG2A supports DC 12V Power (J20) or 4 Pin +12V Power (J19). Figure.

(J20)

(J19)

Serial ATA Hard Disk Setting for IDE

Each Serial ATA channel can only connect to one SATA hard disk at a time; there are total Two connectors, J4/ J5. The installation of Serial ATA is simpler and easier than IDE, because SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation. All you need to do is to plug in two cables and enable SATA in System BIOS.
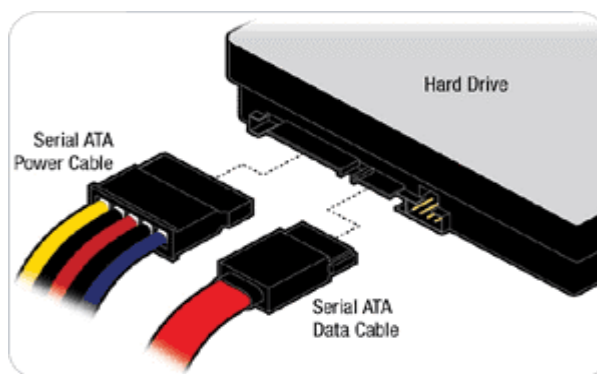
5.2   BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on DC 12V power.keyboard, mouse, USB floppy drive, SATA hard disk, VGA connector, device power cables, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with PEB-2131VG2A, it is recommended, when going with the boot-up sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to "**Load Optimal Defaults**", press "Enter" and "Y" to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick up any one from Primary/Secondary Master/Slave IDE ports, and press "Enter". Setup the selected IDE port and its access mode to "Auto". This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

Improper disable operation

There are too many occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the COM1/ COM2 ports, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

Disable COM1 serial port to release IRQ #4
Disable COM2 serial port to release IRQ #3
Etc…

A quick review of the basic IRQ mapping is given below for your reference.

IRQ#	Description
IRQ #0	System Counter
IRQ #1	Keyboard
IRQ #2	Programmed Controller
IRQ #3	COM2
IRQ #4	COM1
IRQ #5	Display, Network, USB 1.0/1.1 UHCI Controller
IRQ #6	Floppy Disk Controller
IRQ #7	Printer Port (Parallel Port)
IRQ #8	CMOS Clock
IRQ #9	ACPI Controller
IRQ #10	USB 1.0/1.1 UHCI Controller, Multimedia Device
IRQ #11	Network Controller
IRQ #12	SMBus, USB 1.0/1.1 UHCI, USB 2.0 EHCI Controller
IRQ #13	PS/2 mouse
IRQ #14	Data Processor
IRQ #15	Primary IDE Controller

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers.

5.3   FAQ

Symptom: SBC keeps beeping, and no screen has shown.
Solution: In fact, each beep sound represents different definition of error message. Please refer to table as following:

Beep sounds	Meaning	Action
One long beep with one short beeps	DRAM error	Change DRAM or reinstall it
One long beep constantly	DRAM error	Change DRAM or reinstall it
One long beep with two short beeps	Monitor or Display Card error	Please check Monitor connector whether it inserts properly
Beep rapidly	Power error warning	Please check Power mode setting

Installation Problem

Question: How do I connect my keyboard and mouse, as there is only one connector?
Answer: Users may always adopt PS/2 keyboard and mouse over the PS/2 interface, JP3 on PEB-2131VG2A.

Question: I forget my password of system BIOS, what am I supposed to do?
Answer: You can simply short 2-3 pins on JP1 to clean your password.

Note:
Please visit our technical web site at
http://www.portwell.com.tw
For additional technical information, which is not covered in this manual, you can mail to tsd@mail.portwell.com.tw or you can also send mail to our sales, they will be very delighted to forward them to us.

System Memory Address Map

Each on-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used.

Memory Area	Size	Device Description
0000-003F	1K	Interrupt Area
0040-004F	0.3K	BIOS Data Area
0050-006F	0.5K	System Data
0070-0E2E	54K	DOS
0E2F-0F6B	5K	Program Area
0F6C-9EFF	574K	[Available]
= Conventional memory ends at 640K =		
9F00-9FBF	3K	Unused
9FC0-9FFF	1K	Extended Bios Area
A000-AFFF	64K	VGA Graphics
B000-B7FF	32K	Unused
B800-BFFF	32K	VGA Text
C000-CEBF	59K	Video ROM
CEC0-EFFF	133K	Unused
F000-FFFF	64K	System ROM
HMA	64K	First 64k

Interrupt Request Lines (IRQ)

Peripheral devices can use interrupt request lines to notify CPU for the service required.   The following table shows the IRQ used by the devices on-board.

IRQ#	Current Use	Default Use
IRQ 0	System ROM	System Timer
IRQ 1	System ROM	Keyboard Event
IRQ 2	[Unassigned]	Usable IRQ
IRQ 3	System ROM	COM 2
IRQ 4	System ROM	COM 1
IRQ 5	[Unassigned]	Usable IRQ
IRQ 6	System ROM	Diskette Event
IRQ 7	[Unassigned]	Usable IRQ
IRQ 8	System ROM	Real-Time Clock
IRQ 9	[Unassigned]	Usable IRQ
IRQ 10	[Unassigned]	Usable IRQ
IRQ 11	[Unassigned]	Usable IRQ
IRQ 12	System ROM	IBM Mouse Event
IRQ 13	System ROM	Coprocessor Error
IRQ 14	System ROM	Hard Disk Event
IRQ 15	[Unassigned]	Usable IRQ